

WHAT IS CLAIMED IS:

1. A structure for mounting a semiconductor device to a substrate, comprising:

a mounting pad disposed on said substrate,

5 a sealing resin provided on said substrate on which said semiconductor device is to be mounted, and

10 a plurality of projecting electrodes disposed on a surface of said semiconductor device facing said substrate, and each said projecting electrode including a substantially spherical portion and a pointed portion in contact under pressure, with said mounting pad and deformed such that a contact portion with said mounting pad is enlarged from a point to a plane.

15 2. The structure as claimed in claim 1, wherein said substrate is formed with a laminate structure having a conductive layer in the inside thereof,

said mounting pad has a concave portion in which a bottom of said concave portion is in contact with said conductive layer, and

20 said projecting electrode is in contact under pressure to the bottom of the concave portion of said mounting pad.

3. The structure as claimed in claim 1, wherein said sealing resin is a resin hardened when heated to a predetermined temperature.

25 4. The structure as claimed in claim 1, wherein said sealing

resin is a resin hardened when ultra-violet rays are irradiated.

5 5. The structure as claimed in claim 1, wherein the concave portion of said mounting pad has an opening portion greater than the bottom.

6. The structure as claimed in claim 1, wherein the concave portion of said mounting pad has an opening portion smaller than the bottom.

10 7. The structure as claimed in claim 6, wherein a diameter for the pointed portion of said projecting electrode is greater than a diameter for the opening portion of the concave portion of said mounting pad.

15 8. The structure as claimed in claim 1, wherein length of the pointed portion of said projecting electrode before deformation is from 40% to 70% relative to entire length of said projecting electrode.

20 9. The structure as claimed in claim 1, wherein length of the pointed portion of said projecting electrode before deformation is from 50% to 60% relative to entire length of said projecting electrode.

10. The structure as claimed in claim 1, wherein length of the pointed portion of said projecting electrode after deformation is not more than 50% of length of said pointed portion before deformation.

25 11. A method of mounting a semiconductor substrate having

a plurality of projecting electrodes to a substrate, on which a mounting pad is formed and a sealing resin is provided, wherein the method comprises the steps of:

5 pressing said projecting electrode to said mounting pad and thereby deforming a pointed shape portion at the top end of each said projecting electrode and,

hardening said sealing resin.

12. The method as claimed in claim 11, wherein the hardening step comprises the step of heating said sealing resin at a predetermined temperature.

13. The method as claimed in claim 11, wherein the hardening step comprises the step of irradiating ultra-violet rays to said sealing resin.

14. The method as claimed in claim 11, wherein the top end of said projecting electrode has a pointed shape before deformation and other portion of said projecting electrode has a substantially spherical shape.

15. The method as claimed in claim 11, wherein an area of contact between said projecting electrode and said mounting pad is enlarged from a point to a plane as said projecting electrode deforms.

16. A method of mounting a semiconductor substrate having a plurality of projecting electrodes to a substrate, which is formed by a laminate structure having a conductive layer at the inside thereof, on which a mounting pad is formed, said

mounting pad having a concave portion, the bottom of the concave portion being in contact with said conductive layer and an sealing resin is provided on said substrate, each said projecting electrode having a substantially spherical portion and a pointed shape portion at the top end thereof, wherein the method comprises the steps of:

opposing said projecting electrode and the concave portion of said mounting pad,

pressing said projecting electrode to the bottom of the concave portion of said mounting pad, thereby deforming the pointed shape portion of said projecting electrode, and

hardening said sealing resin.

17. The method as claimed in claim 16, wherein an area of contact between said projecting electrode and said mounting pad is enlarged from a point to a plane as the pointed shape portion of said projecting electrode is deformed.

18. The method as claimed in claim 16, wherein the deforming step comprises the step of deforming the pointed shape portion till the length of said pointed shape portion is reduced to less than one-half of the length of the pointed shape portion before deformation.

19. The method as claimed in claim 16, wherein an opening portion of the concave portion of said mounting pad is smaller than the bottom of the concave portion, and

the deforming step comprises the step of deforming the

pointed shape portion of said projecting electrode till a diameter for the pointed shape portion of said projecting electrode is made greater than a diameter for the opening portion of the concave portion.

5 20. A structure of mounting a semiconductor device to a substrate, comprising:

a mounting pad disposed on said substrate,

a sealing resin disposed between said semiconductor device and said substrate, and

10 a plurality of projecting electrode for connecting said semiconductor device to said mounting pad on said substrate, being narrow in the middle portion thereof.

21. A structure of mounting a semiconductor device to a substrate having an inner layer, comprising,

15 a mounting pad disposed on said substrate, having a concave portion, the bottom of the concave portion being in contact with said inner layer of said substrate,

a sealing resin disposed between said semiconductor device and said substrate, and

20 a plurality of projecting electrodes for connecting said semiconductor device to said mounting pad on said substrate.

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